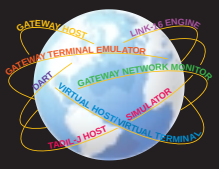
SPAWAR
Systems Center
San Diego

DATA LINK TEST TOOLS
Product Line



Data Link Test Tools (DLTTs) are a family of computer applications developed and maintained by the Space and Naval Warfare Systems Center, San Diego (SSC San Diego), Code D45, to support and enhance Tactical Digital Information Link (TADIL) systems integration and interoperability testing, and training programs.

The tools enable geographically separated test facilities, host combat systems, and Link-16 networks to be linked over secure telephone or higher speed communications lines into single networks and to participate in integrated real-time testing without "real world" costs and logistical limitations. DLTTs feature menu-driven graphical interfaces, geographic tactical situation displays, and a wide range of capabilities to accommodate many different user requirements for TADIL Systems testing and post test data analysis.

APPLICATIONS

- Host development testing
- Interoperability testing
- System validation
- Connectivity for live testing
- Deployment testing
- Proof-of-concept testing
- On-line analysis
- Crew training
- Mission monitoring
- Mission evaluation
- Crew debrief
- Impact analysis
- Demonstrations

MAJOR USER GROUPS

DLTTs have been installed at more than 100 United States Navy, Army, Air Force, Marine Corps, NATO, and other test and development sites throughout the world and are used by a wide range of testing organizations, including:

- Theater Missile Defense System Exerciser (TMDSE)
- Distributed Engineering Plant (DEP/ADEP/JDEP)
- Joint Interoperability Test (JIT) network
- Army Software Engineering Directorate (SED)
- Navy MIDS-LVT Test & Evaluation Program
- Tactical Data Link Interoperability Testing Syndicate (TDLITS)

DATA LINK TEST TOOLS

The family of Data Link Test Tools includes:

- Data Link Gateway (DLGW)
  - – Gateway Host (GH)
  - – Gateway Terminal Emulator (GTE)
  - – Gateway Virtual Host/Virtual Terminal (GVH/GVT)
  - – Gateway Network Monitor (GNM)
- Link-11 Gateway Data Terminal Set Emulator (GDE)
- Link-16 Engine (LSE)
- TADIL J Host Simulator (TJHS)
- Script Generator (SG)
- Script Controller (SC)
- Simulation Interface Unit (SIU)
- Data Analysis and Reduction Tool (DART)

DATA LINK GATEWAY

The DLGW, cornerstone of the DLTTs, provides a cost-effective method of transparently interconnecting multiple data link test facilities and host combat systems over secure telephone lines or higher speed circuits, as well as tools to aid in the analysis, problem solving and integration of host systems, terminals and simulation equipment. The system can emulate or interface to most Joint Tactical Information Distribution System (JTIDS) and Multifunctional Information Distribution System (MIDS) terminal types.

An extended testing network is accomplished by the installation of a DLGW system at each test site. By either simulating a link host to a JTIDS or MIDS terminal operating in a Link-16 network or emulating a terminal, the DLGW systems are networked over secure communications lines, enabling a virtual Link-16 network. A DLGW network can support up to 128 DLGW nodes, operating in any combination of DLGW configurations.

To fit testing needs and equipment available, the versatile DLGW system can be configured in a variety of operating modes:

Link-16 host emulation – to allow multiple separate Link-16 networks to communicate in a coordinated network. As a host system, the DLGW can emulate virtually all Link-16 system types and support various interfaces.

Terminal emulation – to allow Link-16-capable systems to communicate without real Link-16 terminals. The DLGW provides terminal control and terminal monitoring, and satisfies the terminal interface in accordance with the applicable Interface Control Document (ICD).

Virtual host and virtual terminal (in pairs) – to allow geographically separate hosts and terminals to operate as though they were collocated.

Network monitor – to display the tactical picture, allowing command centers real-time operational visibility of the exercise and collection and/or review of tactical data.

Link-11 emulation – to allow Link-11 hosts to connect to other DLGWs to pass Link-11 data.

LINK-16 ENGINE

The Link-16 Engine (LSE) is one in a family of Data Link Test Tools designed to facilitate TADIL integration and interoperability testing and training. Its primary use is as a Link-16 message generator to a DLGW network.

Product Line

The LSE also can be used as a "stand-alone" tool to enable a Link-16 system under test to exchange Link-16 messages without having the normally required Link-16 terminal interface. The LSE provides the timely transmission of specific messages either by generating these messages itself or by using previously recorded script input to generate Link-16 messages.

TADIL J Host Simulator (TJHS)

By emulating a Link-16 host system and providing an extensive situational display, the TJHS becomes a low-cost tool to facilitate TADIL testing by emulating command and control and non-command and control functions. It also has extensive scripting capability.

The TJHS can provide Link-16 terminal control, or it may be used as a monitor of the 1553B interface between a terminal and another host. The tool has data extraction, reduction and replay capabilities for post-test analysis. It can be configured on either a desktop or laptop computer.

Script Generator (SG) – The SG is a stand-alone offline utility that creates test scripts. These scripts pass events to various DLTTs for processing on a Link-16 network and Systems Integration Facility (SIF) script network.

Script Controller (SC) – The SC executes test scripts on the SSC San Diego SIF Script Network, used in many testing scenarios.

Simulation Interface Unit (SIU) – The SIU is a customized system that allows remote simulation systems to connect to the SIF Script Network to participate in combined scenarios/exercises.

Data Analysis and Reduction Tool (DART) – The DART provides functionality to support and enhance post-test analysis.

System Components/Support

DLTT systems are configured at SSC San Diego. Modular design and open architecture allow for flexibilty and rapid integration of new interfaces and capabilities to suit user needs. The application package includes:

- High-speed computer (Pentium), monitor, keyboard
- Removable hard drive and floppy drive
- Timing board, I/O boards and host terminal interface board
- Operating system software
- Program software

The DLTT Program Office provides full and flexible support services for users, including system configuration, installation, training, ongoing technical support, and upgrade program options.

FURTHER INFORMATION

Further information on Data Link Test Tools and data link testing facilities/services at SSC San Diego is available at the following:

DLTT Web Site: http://gateway.spawar.navy.mil

Send email to: gwinfo@spawar.navy.mil

Telephone (toll free in the U.S.): 1-888-GWLinks (495-4657)

Points of Contact

DLTT Program Manager

Space and Naval Warfare Systems Center, San Diego
Code D45
53560 Hull Street
San Diego, CA 92152-5001
USA
Telephone: (619/DSN) 553-3224
FAX: (619/DSN) 553-8221

DLTT Application Engineering Support

Space and Naval Warfare Systems Center, San Diego
Code D4524
53560 Hull Street
San Diego, CA 92152-5001
USA
Telephone: (619/DSN) 553-2601 or (619/DSN) 553-6094
FAX: (619/DSN) 553-8221

DLTT Foreign Military Sales

Space and Naval Warfare Systems Center, San Diego
Code D4524
53560 Hull Street
San Diego, CA 92152-5001
USA
Telephone: (619/DSN) 553-9766 or (619/DSN) 553-9401
FAX: (619/DSN) 553-8221

DLTT System Purchase Support

Space and Naval Warfare Systems Center, San Diego
Code D4524
53560 Hull Street
San Diego, CA 92152-5001
USA
Telephone: (619/DSN) 553-9401 or (619) 553-0033
FAX: (619/DSN) 553-8221 or (619) 553-6773

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